

## Session 5 Overview

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# Catalytic Filters

### Session Chairs

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This session deals with the separation of particles from gases combined with simultaneous gas phase reactions catalyzed by activated solid surfaces. Eight presentations deal mostly with experimental studies or combined experimental and theoretical studies. Various kinds of particles and gaseous compounds to be removed are reported, related to different process applications. The presentations can be divided in two groups dealing with either reducing gas atmospheres (from gasification processes) or with oxidizing (i.e. O<sub>2</sub>-containing) gas atmospheres.

### Reducing Gas Atmospheres

The investigations, all related to biomass gasification gases and using Ni-catalysts, address the following aspects:

- NH<sub>3</sub>-conversion,
- Steam reforming of hydrocarbons (tar),
- Effects of H<sub>2</sub>S on catalyst performance during steam reforming of hydrocarbons.

### Oxidizing Gas Atmospheres

The investigations, mostly related to combustion flue gases, address the following aspects:

- Dust removal combined with catalytic VOC oxidation in fluidized beds,
- Ash particles from biomass combustion, NO<sub>x</sub>-reduction and VOC (dioxin) oxidation simultaneously,
- Soot particle removal and catalytic soot oxidation (related to hydrocarbon combustion, diesel engine),
- NO- and N<sub>2</sub>O-reduction and CO oxidation in pressurized fluidized bed combustion,
- Removal of particles from iron and glass melting processes and catalytic NO<sub>x</sub>-reduction.



The variety of chemical and physical processes occurring in catalytic filters offer a wide field for research. Of particular interest appear catalyst formulation and dispersion, chemical kinetics (activity, selectivity, deactivation), transport processes and effects on particle separation performance.